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Polycrystalline diamond cutters with working surfaces having varied wear resistance while maintaining impact strength

(57) Disclosed is a polycrystalline diamond or diamond-like element (10) with greatly improved wear resistance without loss of impact strength. These elements are formed with a binder-catalyzing material in a high-temperature, high-pressure (HTHP) process. The PCD element has a body with a plurality of bonded diamond or diamond-like crystals forming a continuous diamond matrix that has a diamond volume density greater than 85%. Interstices among the diamond crystals form a continuous interstitial matrix containing a catalyzing material. The diamond matrix table is formed and integrally bonded with a metallic substrate containing the catalyzing material during the HTHP process. The diamond matrix body has a working surface, where a first portion (80) of the interstitial matrix in the body adjacent to the working surface is substantially free of the catalyzing material, and a second portion (82) of the interstitial matrix in the body adjacent to the working surface contains the catalyzing material. The first portion of the interstitial matrix and the second portion of the interstitial matrix have substantially the same impact strength

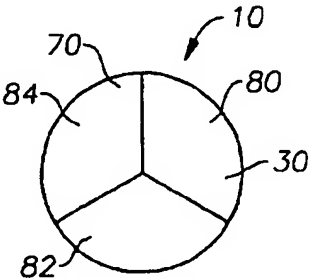


Fig. 15

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EUROPEAN SEARCH REPORT

Application Number  
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The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 11 February 2002	Examiner Hauck, H
CATEGORY OF CITED DOCUMENTS			
X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

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